

62D CONGRESS, { HOUSE OF REPRESENTATIVES. { DOCUMENT
3d Session. } No. 1128.

BASS HARBOR BAR AND DEER ISLAND THOROUGHFARE,
ME.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

WITH A LETTER FROM THE ACTING CHIEF OF ENGINEERS, REPORTS
ON EXAMINATION AND SURVEY OF BASS HARBOR BAR AND
DEER ISLAND THOROUGHFARE, ME.

DECEMBER 11, 1912.—Referred to the Committee on Rivers and Harbors and ordered
to be printed, with illustrations.

WAR DEPARTMENT,
Washington, December 10 1912.

SIR: I have the honor to transmit herewith a letter from the
Acting Chief of Engineers, United States Army, dated 25th ultimo,
together with copies of reports from Lieut. Col. W. E. Craighill,
Corps of Engineers, dated August 28, 1911, September 13, 1912, and
November 1, 1912, with maps, on preliminary examination and sur-
vey, respectively, of Bass Harbor Bar and Deer Island Thoroughfare,
Me., made by him in compliance with the provisions of the river and
harbor act approved June 25, 1910.

Very respectfully,

HENRY L. STIMSON,
Secretary of War.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, November 25, 1912.

From: The Chief of Engineers.

To: The Secretary of War.

Subject: Examination and survey of Bass Harbor Bar and Deer
Island Thoroughfare, Me.

1. There are submitted herewith, for transmission to Congress,
reports dated August 28, 1911, September 13, 1912, and November 1,
1912, with maps, by Lieut. Col. W. E. Craighill, Corps of Engineers, on

2 BASS HARBOR BAR AND DEER ISLAND THOROUGHFARE, ME.

preliminary examination and survey, respectively, of Bass Harbor Bar and Deer Island Thoroughfare, Me., authorized by the river and harbor act approved June 23, 1910

2. Bass Harbor Bar is a shoal extending from the southerly extremity of Mount Desert Island. Deer Island Thoroughfare is a narrow passage about 9 miles long on the southerly side of Deer Island. Both of these localities are on the route used by the many small coasting vessels and steamers plying along the coast of Maine, and the latter is also used by vessels engaged in taking stone from Stonington, which is situated in a cove on the northerly side of the thoroughfare. The improvement desired in each case is an increase in channel dimensions to render navigation safer.

3. The plan recommended by the district officer for improvement of Bass Harbor Bar contemplates the excavation of a channel not less than 14 feet deep at mean low tide for a width of 250 feet across the bar at an estimated cost of about \$10,000. (It is believed that there will be no maintenance work required, and no estimate therefor is submitted.) For the improvement of Deer Island Thoroughfare the district officer proposes to remove obstructing ledges to a depth of 15 feet at mean low tide, for a width of about 300 feet. The cost of this work is estimated at \$40,000 and it is believed that no expenditures for maintenance will be required.

4. These reports have been referred, as required by law, to the Board of Engineers for Rivers and Harbors, to whose report dated November 11, 1912, attention is invited. The board and the division engineer concur in the opinion expressed by the district officer.

5. After due consideration of the above-mentioned reports, I concur in general with the views of the district officer, the division engineer, and the Board of Engineers for Rivers and Harbors, and therefore, in carrying out the instructions of Congress, I report as follows: That the improvement by the United States of Bass Harbor Bar and Deer Island Thoroughfare, Me., is deemed advisable so far as to secure an available channel depth of 14 feet at Bass Harbor Bar and 15 feet at Deer Island Thoroughfare, with channel widths of 250 feet and 300 feet, respectively, increased at entrances and on curves, following in general the methods described in the report of the district officer, at estimated costs of \$10,000 and \$40,000, respectively, these estimates being based on the supposition that the construction work will, as now seems desirable and advantageous, be prosecuted under a first appropriation of the entire estimated cost.

H. TAYLOR,
Lieut. Col., Corps of Engineers,
Acting Chief of Engineers.

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
ON SURVEY.

[Third Indorsement.]

THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
Washington, November 11, 1912.

TO THE CHIEF OF ENGINEERS UNITED STATES ARMY.

1. As stated in the report on preliminary examination, Bass Harbor Bar and Deer Island Thoroughfare are distinct places about

15 miles apart, though they are on the same route and are used by the same class of vessels. The authorized surveys of these localities having been made by the district officer, he submits for the improvement of Bass Harbor Bar a plan contemplating the excavation and marking of a channel not less than 14 feet deep at mean low tide for a width of 250 feet across the bar at the location shown on the accompanying tracing. This work is estimated to cost not to exceed \$10,000, and it is believed that there will be no cost for maintenance except for the preservation of the channel marks. For Deer Island Thoroughfare he proposes to excavate the ledges lying within the area shaded on the related tracing to a depth of 15 feet at mean low tide, for a width of about 300 feet, which will in fact afford a width of about 400 feet to the depth indicated. It is estimated that this work will cost \$40,000. All material above a plane of 15 feet below mean low tide is bare ledge, indicating that there will be no maintenance charge.

2. No new data regarding the commerce using these passages were secured during the progress of the survey except such as corroborate the information given in the report on preliminary examination, in which the general character of commerce using this route was described and explanation given of the need for improvement of the localities in the interests of the many small vessels plying along the coast, as well as for the regular steamers engaged in freight and passenger transportation. As a result of his further investigations, the district officer is convinced that the work outlined should be undertaken for the betterment of navigation at these localities, and the division engineer concurs in his recommendations. After due consideration of the facts presented, the board believes that it is advisable for the United States to undertake the improvement of Bass Harbor Bar and of Deer Island Thoroughfare to the extent indicated above at estimated costs of \$10,000 and \$40,000, respectively. If the work is authorized, the full amount of the estimate for each locality should be appropriated at one time.

3. In compliance with law, the board reports that there are no questions of terminal facilities, water power, or other subjects so related to the project proposed that they may be coordinated therewith to lessen the cost and compensate the Government for expenditures made in the interests of navigation.

For the board:

WM. T. ROSSELL,
Colonel, Corps of Engineers,
Senior Member of the Board.

PRELIMINARY EXAMINATION OF BASS HARBOR BAR AND DEER ISLAND THOROUGHFARE, ME.

UNITED STATES ENGINEER OFFICE,
Portland, Me., August 28, 1911.

SIR: 1. I have the honor to submit the following report on a preliminary examination of Bass Harbor Bar and Deer Island Thoroughfare, Me., directed by the river and harbor act approved June 25, 1910.

2. Though these two localities—Bass Harbor Bar and Deer Island Thoroughfare—are named jointly in the order for examination, they

4 BASS HARBOR BAR AND DEER ISLAND THOROUGHFARE, ME.

are two separate and distinct places, about 15 miles apart, though on the same route of travel for a large class of vessels, and it is presumably on this account that they are named together in the act of 1910.

3. While much of the commerce is common to both places, yet for a clear understanding it will be necessary to discuss them separately.

BASS HARBOR BAR.

4. Bass Harbor Bar is a shoal extending from the southerly extremity of Mount Desert Island a distance of about 1 mile to Great Gotts Island. For probably one-half the distance nearest to Mount Desert Island the bar is about one-eighth of a mile across and the water deepens rapidly on each side. There is a lighthouse on Bass Harbor head at the northerly end of the bar. The locality is shown on Coast Survey Chart No. 308, which indicates a depth of about 12½ feet across the bar through a narrow channel about one-eighth of a mile south of the light. It is claimed, however, by mariners that there is only about 11 feet at low water, that the channel is crooked with some bowlders, and that when the sea is running only the shoalest vessels may attempt to cross.

5. I personally inspected the locality June 23, 1911. It is impracticable to give definite statistics as to the commerce at this place. Much of the great movement of small coasting vessels and steamers along the coast of Maine uses the passage. The small coasting vessels which are moving throughout the year run along the coast from harbor to harbor, coming in at night or when the weather is threatening. This necessitates their keeping close to the coast. Bluehill Bay under the lee of Great Gotts, Placentia, and Swan Islands affords good shelter. The wide passage to the southwest would seem to afford a better opportunity, but skippers—and I have talked with several—claim that in coming from the east on the approach of darkness they have to run for Bass Harbor Head light, the only one near, and to secure shelter necessitates crossing the bar. Besides this it is a more direct passage. Towboats are not available on that part of the coast, and in the event of light winds with darkness coming on, or of snowstorms or fogs threatening, it behooves these small craft to secure shelter and to do it as quickly as possible. Aside from the great number of coasting vessels there are regular lines of steamers of the Eastern Steamship Co., Maine Central Railroad Co., Vinalhaven & Rockland Steamboat Co., and Maine Coast Transportation Co. The Sagadahoc Towing Co., which is engaged in the business of towing barges along the coast, states that its tonnage amounts to some 24,000 tons. The movement of lime, stone, and other products by coasting vessels is beyond my resources to estimate, but I am satisfied that it is so important that it should receive serious consideration.

6. What appears to be desired at this locality is that a channel shall be cut through the bar. One interest, the Sagadahoc Towing Co., calls for a depth of 20 feet at mean low tide for a width of at least 300 feet. Other needs, depending on the character and size of the vessels interested, vary from a mere removal of some of the bowlders to the securing of a straight channel 12 to 15 feet in depth.

BASS HARBOR BAR AND DEER ISLAND THOROUGHFARE, ME. 5

7. It is evident that there are no matters of water power development or land reclamation which can enter into a project for improvement at this locality. Nor does the matter of wharf or terminal facilities have any bearing.

8. It is my opinion that Bass Harbor Bar is worthy of improvement by the National Government, providing anything of practical benefit can be accomplished at a very moderate cost, which seems to me to be a reasonable probability, and provided also that there are good prospects that such a channel will keep open without assistance. The cost of a survey will be small, and in order to collect the data necessary to a conclusion in these respects it is recommended that a survey be made, the cost of which should not exceed \$300.

DEER ISLAND THOROUGHFARE.

9. Deer Island Thoroughfare is a narrow passage about 9 miles long on the southerly side of Deer Island, which lies on the eastern side of the entrance to Penobscot Bay. The locality is shown on Coast Survey Chart No. 309. It separates Deer Island from a multitude of islands and ledges to the south. The thoroughfare itself is much obstructed by ledges, though it is a much favored road and the one most extensively used, especially by small craft, for similar reasons to those given above in the case of Bass Harbor Bar. It is extensively buoyed and is a dangerous passage to attempt except in the daytime, but, being inside and affording good chances for harbor, is greatly used. While it might seem from a scrutiny of the chart that other passages, especially the one indicated as Merchants Row, might be easier and safer, yet the practical fact remains that vessels insist on going via Deer Island Thoroughfare.

10. This locality is in the midst of a great granite district, and all transportation is of necessity conducted by water. Stonington, which lies on a cove on the northerly side of the Thoroughfare, is a place of considerable importance. There are a number of large granite quarries located along the Thoroughfare and the shipments of stone out, and of supplies in, give rise to considerable commerce aside from that simply passing through. The Maine Central Railroad Co.'s boats make daily round trips four months and two trips per week the balance of the year. The Eastern Steamship Co. runs on the same schedule. The Vinalhaven & Rockland Steamboat Co. makes a daily round trip the year around. The Maine Coast Co. steamers make two trips per week. The sailing vessels which frequent Stonington are from 78 to over 200 feet in length and draw from 7 to 24 feet. The receipts and shipments at Stonington alone are said to amount to about 50,000 tons per annum and the passengers to number from 2,200 to 2,500 per month over one line alone. Mr. John L. Goss, who has large granite quarries, states that there are from 150 to 200 sail per year which take stone from Stonington. The material is distributed all along the Atlantic coast as far south as Galveston. Shipments designed for the interior are carried to railroad points and there reshipped, much of it going through Boston. Vessels coming from the west at night are obliged to stay out in the bay, whereas if the channel were better it is claimed that after making Mark Island Light (Thoroughfare Light) they could go into the Thoroughfare and reach safe anchorage. In addition to the

6 BASS HARBOR BAR AND DEER ISLAND THOROUGHFARE, ME.

tonnage given for Stonington must be added the 24,000 tons handled annually by the Sagadahoc Towing Co. and the great amount of coastwise traffic which I am unable to even estimate.

11. I visited this locality personally June 21, 1911, and my conclusions are the result of my observations as well as interviews and correspondence with others. What is desired is the removal of a few of the more obstructive ledges at and near Stonington.

12. There are no matters of water-power development or land reclamation which can be considered in connection with a project for the improvement at this locality. The stone interests have wharves and terminal facilities sufficient for handling large quantities of material, and many of them are fitted with derricks of considerable capacity. As most of the business consists in this special line of manufacturing or output, and not in general commerce, the matter of wharves and terminal facilities can be safely left to take care of itself. There are abundant wharf sites to be had, and the accommodations undoubtedly can be relied upon to keep pace with the need without any demands on the part of the Government.

13. It is my opinion that Deer Island Thoroughfare is worthy of improvement by the National Government, provided the cost is not excessive. A preliminary examination does not develop this feature satisfactorily, and I think the locality is fully deserving of such further investigation as would result from a survey, which I have the honor to recommend be authorized. The cost should not exceed \$800.

Very respectfully,

W. E. CRAIGHILL,
Lieut. Col., Corps of Engineers.

THE CHIEF OF ENGINEERS, UNITED STATES ARMY
(Through Division Engineer).

[First endorsement]

NORTHEAST DIVISION ENGINEER OFFICE,
New York, August 31, 1911.

1. Respectfully forwarded to the Chief of Engineers, United States Army.

2. Bass Harbor Bar: From personal experience along the coast of Maine, I know that the difficulties experienced by navigators in the neighborhood of Bass Harbor Head are not overstated by Lieut. Col. Craighill. A very large amount of traffic, both passenger and freight, passing east along the coast of Maine skirts Mount Desert Island very closely and, coming from the east, passing through Eggemoggin Reach and the Deer Island Thoroughfare, thence through Casco Passage north of Swan Island or through the broader channel to the north of Pond Island, heads for Bass Harbor Light. Lieut. Col. Craighill's recommendations are concurred in.

3. Deer Island Thoroughfare: From a personal knowledge of the locality in question, Lieut. Col. Craighill's recommendations are concurred in.

W. M. BLACK,
Colonel, Corps of Engineers
Division Engin.

BASS HARBOR BAR AND DEER ISLAND THOROUGHFARE, ME. 7

[Third indorsement.]

THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
Washington, September 11, 1911.

1. Respectfully returned to the Chief of Engineers, United States Army.

2. Bass Harbor Bar is a shoal extending from the southerly extremity of Mount Desert Island, Me. Coast Chart No. 308 shows a depth of $12\frac{1}{2}$ feet through a narrow channel across the bar, but mariners claim that there is only about 11 feet at low water, that the channel is crooked with some bowlders, and that when the sea is running only the lightest draft vessels may attempt to cross. The passage is used by many small coasting vessels and steamers plying along the coast of Maine, and while the commerce is not susceptible of even approximate determination, the district officer is satisfied that it is of sufficient importance to receive serious consideration. The improvement desired is a channel of suitable dimensions across the bar. The district officer believes the locality worthy of improvement, provided anything of practical benefit and reasonable permanence can be accomplished at moderate cost. To determine these questions he recommends the authorization of a survey at an estimated cost of \$300.

3. Deer Island Thoroughfare is a narrow passage about 9 miles long on the southerly side of Deer Island, Me., and is shown on Coast Chart No. 309. It is much obstructed by ledges and is a dangerous passage to attempt except in the daytime, but being inside and affording good chances for harbor it is greatly used, especially by small craft. This locality is in the midst of an important granite district, and the outward shipment of stone and inward shipment of supplies afford a commerce of considerable importance, the transportation of which is necessarily by water. Stonington, which lies in a cove on the northerly side of the Thoroughfare, is a place of considerable importance, and is visited by several regular lines of steamers making daily or semiweekly trips. It is stated that from 150 to 200 sail per year take stone from Stonington, and the commerce of this place alone is said to amount to about 50,000 tons per annum. The improvement desired is the removal of the more obstructive ledges at and near Stonington. The district officer believes the locality is worthy of improvement provided the cost is not excessive, and to determine this question he recommends a survey at a cost of not to exceed \$800.

4. Having in mind the large commerce that is carried along this part of the coast, mainly in numerous small vessels which must seek the more protected routes, the board concurs with the district officer and division engineer in recommending the authorization of surveys as specified above, with a view to ascertaining the practicability of accomplishing useful and reasonably permanent improvements at justifiable expense.

For the board:

WM. T. ROSSELL,
*Colonel, Corps of Engineers,
Senior Member of the Board.*

8 BASS HARBOR BAR AND DEER ISLAND THOROUGHFARE, ME.

[Fourth indorsement]

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, September 15, 1911.

1. Respectfully submitted to the Secretary of War.
2. This is a report on preliminary examination of Bass Harbor Bar and Deer Island Thoroughfare, Me., authorized by the river and harbor act of June 25, 1910.
3. Inviting attention to the report of the Board of Engineers for Rivers and Harbors in the preceding indorsement, I recommend that a survey of the locality, as proposed, be authorized.

H. TAYLOR,
Acting Chief of Engineers.

[Fifth indorsement]

WAR DEPARTMENT, *September 15, 1911.*

Approved as recommended by the Acting Chief of Engineers.

ROBERT SHAW OLIVER,
Acting Secretary of War.

SURVEY OF BASS HARBOR BAR AND DEER ISLAND THOROUGHFARE,
ME.

UNITED STATES ENGINEER OFFICE,
Portland, Me., September 13, 1912.

From: Lieut. Col. W. E. CRAIGHILL, CORPS OF ENGINEERS.

To: The CHIEF OF ENGINEERS, UNITED STATES ARMY
(Through division engineer).

Subject: Survey of Bass Harbor Bar and Deer Island Thoroughfare, Me.

1. The river and harbor act approved June 25, 1910, directed a preliminary examination of Bass Harbor Bar and Deer Island Thoroughfare, Me. Report on this subject was submitted August 28, 1911, and as a result of the information obtained and submitted surveys were ordered, and it is in connection with this work that the following report is submitted.

2. As stated in the report on the preliminary examination, though these two localities are named jointly, they are separate and distinct places about 15 miles apart, but on the same route used by a large class of vessels.

BASS HARBOR BAR.

3. Data obtained by a survey at this locality is shown on tracing herewith, indicated as sheet No. 1. Characteristic soundings indicate that the best crossing is probably about 800 feet south of the lighthouse and show at that place apparently about 14 feet at mean low tide for a width of about 300 feet over the crest of the bar, which at that place is about 250 feet across, between the 15-foot contours. If work of improvement be undertaken it should be at this particular place for the following reasons: It is believed that better width and depth can be secured here at less cost than at any other place. While there is apparently fairly good water immediately to the north of the

11½-foot shoal, to secure the necessary width would involve much expense for ledge excavation, and it lies too close to the shore to make it safe in all winds. All the data showing soundings is, however, to be taken with reservation. The place is very rough, and a number of days passed before the surveying party could do satisfactory work on the bar. Lines of soundings were taken, but it was considered necessary to use a sweep, and while the data on the tracing as before stated, shows characteristic soundings, numerous bowlders and small patches of ledge which showed less depth were found in sweeping to such degree that developed it would not do to depend on a safe depth greater than 13 feet for a width of about 250 feet. Owing to the rough conditions maintaining on this bar fully satisfactory determination of the character and extent of the bottom was found impracticable within the scope of reasonable expense.

4. No new and reliable data was secured as to the commerce and other interests involved, except such as corroborate the information given in my report on the examination. At the time of the survey 22 schooners were counted at anchor in the harbor just to the west of the bar which had either just crossed or were awaiting an opportunity to do so. The party was on the work but a short time, as the operation was not extensive when once suitable weather conditions prevailed. Such information as was obtained strengthens my opinion that something should be done at this locality and that if a channel can be cleared across the bar it will be of great value to the multitude of sailing craft and passenger steamers that use the passage the year around and also to a great number of yachting craft which visit this part of the coast during the summer.

5. It is my impression that there is ignorance concerning the best place for crossing the bar. One steamboat captain indicated his habitual course as one which would take him directly across the 11½-foot shoal, which contains obstructions over which there is but 10 feet. Furthermore, the passage has not been satisfactorily marked. The tidal currents across the bar are strong, and without full favoring winds sailing vessels are usually obliged to wait for a favoring set of the current.

6. As a result of further investigation and personal interviews with a number of masters of vessels which regularly and frequently cross Bass Harbor Bar, I am of the opinion that work at that locality is justified, though I am unable to give any definite figures as to the character or amount of the commerce. It is a matter of common knowledge that this route is much frequented by a great number of coasting craft of whose movement there is no reliable record. The steamboat use is indicated in my report on the preliminary examination. The project suggested is one which I believe to be fully justified by the benefits to be derived and provides for a depth of not less than 14 feet at mean low tide for a width of 250 feet across the bar at the place shaded upon the tracing. This can be accomplished, it is estimated, at a cost not to exceed \$10,000. The work is of such character that it is not believed that satisfactory specifications can be drawn, and it will doubtless mean that such amount will be applied by the use of hired plant and day labor, involving submarine divers. It will be necessary at the same time to mark the channel, which I think should be done probably with two or more spindles, it being difficult to maintain anchored buoys on the bare

10 BASS HARBOR BAR AND DEER ISLAND THOROUGHFARE, ME.

ledge exposed to heavy seas. Owing to the exposed position and the hard bottom, there must be no question as to the integrity of the marks.

7. It is believed that there will be no cost for maintenance in connection with this work, except possibly what may be needed to keep the spindles or marks in order.

8. Nothing less than the full extent of improvement indicated above will be of any aid to commerce, so that I think that if the work be undertaken by the Government it should be done under a single appropriation of the full estimated amount.

DEER ISLAND THOROUGHFARE.

9. The results of the survey at this place are shown on the accompanying tracing marked 'Sheet No. 2.'

10. It develops that the obstructions to navigation lie at the westerly end of the thoroughfare, where the depth in general is good, but with numerous points of ledge projecting above the bottom in such number and in such positions as to make the passage both difficult and dangerous.

11. Information collected during the progress of the survey confirms the data submitted in my examination report, and also the desirability of work of improvement at this locality. On one day during the survey 37 schooners passed through. This, it is believed, represents a fair average day's business. Some of them had to be towed. Most of the vessels, perhaps nearly all, passing over Bass Harbor Bar also go through Deer Island Thoroughfare, and a large additional number load at the quarries in the immediate neighborhood. Besides the business to which reference was made in my report on the examination a great number of yachts use the thoroughfare, partly because of its being a protected route and partly because of the great scenic beauty for which the place is justly celebrated.

12. It may be observed from the map that the obstructing ledges give depths as shallow as 7 feet at mean low tide and that they lie within a longitudinal distance of about 1,300 feet. While there is a towboat stationed at Stonington, most of the craft make through under sail, so that a fair width is necessary in order to accommodate navigation. The improvement which I suggest for this place is to excavate to a depth of 15 feet at mean low tide the ledges lying within the area shaded on the tracing, or for a width of about 300 feet, which will in fact afford a width of about 400 feet to the depth indicated. This work will, it is estimated, cost \$40,000, and will involve the excavation of about 3,050 cubic yards of ledge.

13. All material above a plane of 15 feet below mean low tide is bare ledge, and I am assured from this and other indications that there will be no maintenance charges.

14. It is my opinion that the interests involved at this locality and the great convenience and safety which will be secured thereby fully justify this expenditure by the General Government.

15. In the interests of commerce, as well as the fact that the improvement would have to be practically completed before being of essential service, the whole estimated cost should be provided at a single appropriation and the work accomplished within a single working season.

W. E. CRAIGHILL.

BASS HARBOR BAR AND DEER ISLAND THOROUGHFARE, ME. 11

[First indorsement.]

OFFICE OF DIVISION ENGINEER,
NORTHEAST DIVISION,
New York City, September 18, 1912.

TO THE CHIEF OF ENGINEERS, UNITED STATES ARMY.

From personal knowledge of the localities, as well as from the reports of the preliminary examination and survey, I concur in the recommendations of the district engineer officer.

W. M. BLACK,
Colonel, Corps of Engineers.

[For report of the Board of Engineers for rivers and harbors on survey, see p. 2.]

SUPPLEMENTAL REPORT ON SURVEY OF BASS HARBOR BAR AND
DEER ISLAND THOROUGHFARE, ME.

UNITED STATES ENGINEER OFFICE,
Portland, Me., November 1, 1912.

From: Lieut. Col. W. E. CRAIGHILL, CORPS OF ENGINEERS.

To: The CHIEF OF ENGINEERS, UNITED STATES ARMY
(Through division engineer).

Subject: Survey of Bass Harbor Bar and Deer Island Thoroughfare,
Me.

1. I have received by department indorsement dated October 26, 1912, a letter addressed to the Chief of Engineers, United States Army, from the Board of Engineers for Rivers and Harbors concerning my report submitted January 16, 1912, on the survey of Bass Harbor Bar and Deer Island Thoroughfare, Me.

2. The board states as follows:

1. The board has under consideration the report of the district officer on survey of Bass Harbor Bar and Deer Island Thoroughfare, Me. These localities are about 15 miles apart, and the district officer states that they are on the same route used by a large class of vessels. He submits a plan of improvement which provides for a depth of 14 feet at Bass Harbor Bar and a depth of 15 feet at Deer Island Thoroughfare. It is not clear to the board why there should be a depth of 15 feet at the latter if a depth of 14 feet will serve at the former, particularly as the Bass Harbor Bar channel appears to be more exposed than the one through Deer Island Thoroughfare. A reduction of 1 foot in the depth over the Deer Island Thoroughfare would materially lessen the cost.

2. The board requests that the district officer be asked to furnish information on this subject, and also regarding the draft of the vessels engaged in traffic through these channels.

3. It is true that the passage via Deer Island Thoroughfare and Bass Harbor Bar is on the same route used by a large class of vessels, but a further explanation is necessary to a clear understanding of the matter. Aside from other traffic Deer Island Thoroughfare is in the center of large granite industries and many vessels coming from the westward go no farther, but load at this place and return. As indicated in my report on the preliminary examination, dated August 28, 1911, the sailing vessels which frequent Stonington, a place of some importance on Deer Island Thoroughfare and in the midst of the granite industry, are from 78 to over 200 feet in length and draw from 7 to 24 feet. Deer Island Thoroughfare is a passage of recognized importance, is quite fully buoyed, and a part at least of its commerce can be definitely stated and its needs definitely known. There is

12 BASS HARBOR BAR AND DEER ISLAND THOROUGHFARE, ME.

fairly good water, but the passage is crooked, due to a number of dangerous ledges in irregular positions. My recommendation as to a project for this place, viz, 15 feet at mean low water, was made because, in my judgment, the amount of traffic and the resulting benefit would justify the estimated cost of \$40,000, because at least that depth was needed, and because the physical conditions allowed of such a project at moderate cost. Greater depth would be unduly expensive, and less will not adequately meet reasonable needs.

4. The depth suggested for Deer Island Thoroughfare is the result of a consideration of various factors pertaining to the situation. The demand of the most prominent interests was for a depth of 18 to 20 feet. The project suggested was that which would produce, in view of physical conditions, the greatest possible benefit at a reasonable expenditure. A greater depth would rapidly increase the cost, a depth of 18 feet for a width of 300 feet being estimated to cost about \$145,000. Anything less than 15 feet would scarcely provide an improvement worthy to be undertaken in the interest of navigation.

5. At Bass Harbor Bar the case is somewhat different. At Deer Island Thoroughfare the suggested project extends over a longitudinal distance of about 1,300 feet. At Bass Harbor Bar the crest of the bar is about 300 feet across. Much, in fact most, of the heavier traffic does not go beyond Deer Island Thoroughfare, but as to such as does go beyond heavier and larger vessels can take the deep and wide passage to the south and west of Bass Harbor Bar. (See Coast Survey Chart No. 308.) The improvement at Bass Harbor Bar was suggested in the interest of the small craft only, drawing, say, up to about 12 feet. As there is no local traffic at this place it was and is impracticable to do more than give a general impression of the business. A study was made of the situation, and 14 feet at mean low tide for a width of 250 feet across the bar is, in my opinion, all that is warranted at this locality, which it is estimated can be secured at a cost of \$10,000. One interest desired a depth of 20 feet at mean low tide, but the cost of this was prohibitive, as it is estimated that a depth of 20 feet for a width of 300 feet would cost nearly \$700,000. A depth of 16 feet for a width of 200 feet across the bar was estimated to cost about \$84,000. A depth of 15 feet was estimated to cost about \$50,000. There appeared to be no justification for the expenditure of these large amounts, and my recommendation for a 14-foot depth was in the interest of the smaller craft only.

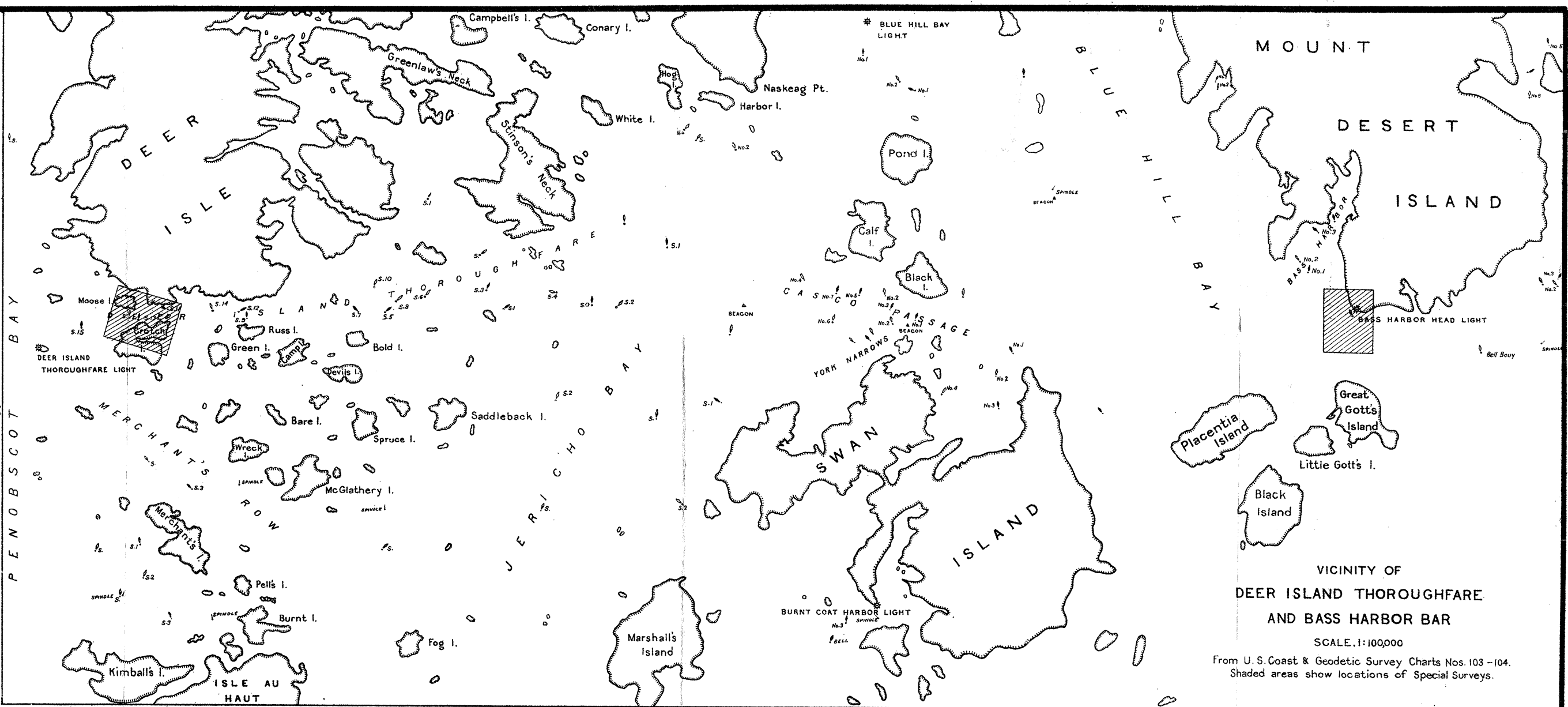
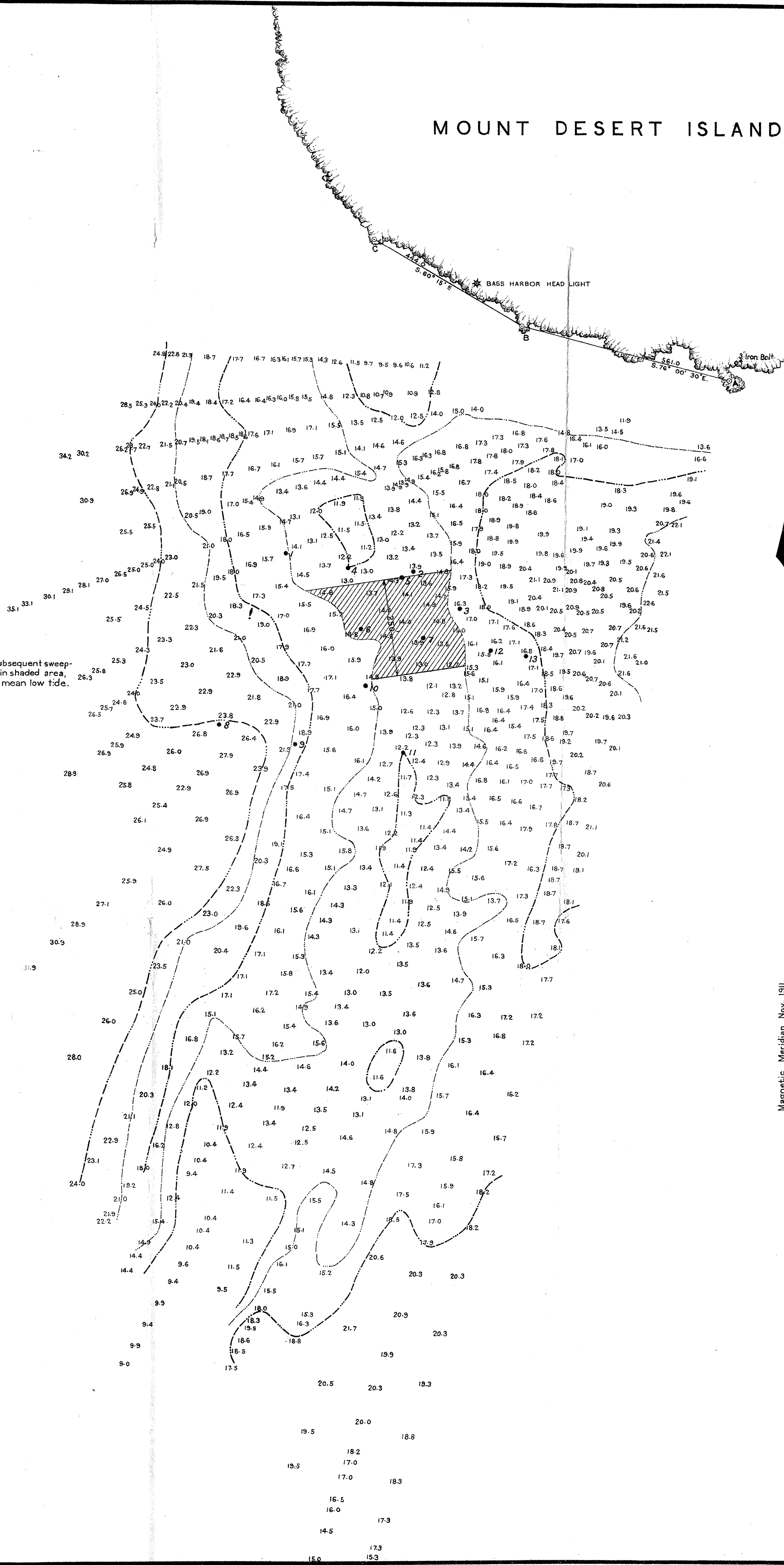
W. E. CRAIGHILL.

[First indorsement.]

OFFICE OF DIVISION ENGINEER,
NORTHEAST DIVISION,
New York, November 5, 1912.

To Chief of Engineers, concurring in Col. Craighill's recommendations.

W. M. BLACK,
Colonel, Corps of Engineers



TESTS OF BOTTOM.				
NO. OF BORING	DEPTH		PENE-TRATION	CHARACTER OF MATERIAL
	WATER	BORING		
1	15.2	15.7	0.5	Rocks to ledge.
2	13.9	13.8	0.0	Bare ledge.
3	16.1	16.1	0.0	" "
4	11.6	11.6	0.0	" "
5	13.5	13.5	0.0	" "
6	14.2	14.8	0.6	Rocks to ledge.
7	14.1	14.6	0.5	" "
8	26.2			" "
9	19.8	23.3	3.5	Gravel and boulders to ledge.
10	15.6	15.6	0.0	Bare ledge.
11	11.8	11.8	0.0	" "
12	16.1	16.6	0.5	Rocks to ledge.
13	16.7	17.1	0.4	" "

NOTE.
Depths are expressed in feet and are referred to Mean Low Water as determined from the U.S. Coast & Geodetic Survey Bench Mark 3 (E.L. 11.04) at Bass Harbor.
12 foot curve shown thus

PROPOSED IMPROVEMENT
To provide a depth of 14 feet at mean low tide over the shaded area.

BASS HARBOR BAR
AND
DEER ISLAND THOROUGHFARE,
MAINE
FROM SURVEY OF OCT. - NOV., 1911.
SCALE, 1:2500
Prepared under the direction of
LIEUT. COL. W. E. CRAIGHILL, CORPS OF ENGINEERS, U.S. ARMY.
ASSISTANTS.
H.W. Hobbs, Asst. Engr. Thos. E. Forrest, Jun. Engr. in charge of survey.
Plotted by L.E. Dow, Jun. Engr. Traced by F.N. Scott, Draftsman.
IN TWO SHEETS - SHEET 1
BASS HARBOR BAR

U.S. Engineer Office,
Portland, Maine, September 13, 1912.
Approved: *W.E. Craighill*
Lieut. Col., Corps of Engineers, U.S. Army.
To accompany report of September 13, 1912,
to the Chief of Engineers

TESTS OF BOTTOM.

NO. OF BORING	DEPTH		PENE-TRATION	CHARACTER OF MATERIAL	NO. OF BORING	DEPTH		PENE-TRATION	CHARACTER OF MATERIAL
	WATER	BORING				WATER	BORING		
1	22.4	23.4	1.0	Gravel.	20	22.5	25.5	30	Gravel.
2	20.8	23.3	2.5	"	21	20.5	22.3	1.8	Sand to ledge.
3	20.1	22.9	2.8	"	22	20.2	23.1	2.9	" " "
4	18.5	21.2	2.7	" and boulders.	23	20.0	22.9	2.9	Sticky mud.
5	17.8	21.3	3.5	" boulders and clay.	24	16.3	23.0	0.0	Ledge.
6	17.1	19.0	0.0	Ledge.	25	16.5	16.5	0.0	"
7	14.0	14.0	0.0	"	26	18.7	20.7	2.0	Sand to ledge.
8	16.8	18.8	0.0	"	27	18.7	20.4	1.7	" " "
9	16.8	18.8	0.0	"	28	16.5	16.5	0.0	Ledge.
10	18.4	18.4	0.0	"	29	13.6	12.0	0.0	"
11	19.3	20.1	0.8	Mud.	30	15.8	12.0	0.0	"
12	18.8	20.0	1.2	"	31	16.4	16.4	0.0	"
13	11.9	19.1	2.5	Ledge.	32	16.0	17.0	1.0	Sand to ledge.
14	15.5	16.6	1.1	Gravel and boulders.	33	13.3	13.3	0.0	Ledge.
15	15.8	19.7	3.9	" to ledge.	34	20.0	22.3	2.3	Sand to ledge.
16	15.8	19.7	3.9	" " "	35	18.2	22.2	3.0	Gravel.
17	17.0	19.2	2.2	" " "	36	19.7	21.7	2.0	"
18	18.4	20.3	1.9	" " "		15.6	17.8	0.0	Ledge.
19	18.7	19.9	1.2	" " "		17.8	17.8	0.0	"
19	19.2	20.8	1.6	" " "					

D E E R I S L E

G R E E N S H E A D

© GREEN SUMMIT

LEGEND.

Low Water Line, shown thus.	---
3 foot curve.	---
6 "	---
9 "	---
12 "	---
15 "	---
18 "	---
21 "	---
24 "	---
27 "	---
30 "	---
36 "	---
42 "	---
48 "	---

M O O S E I S L A N D

TRIANGULATION.

LINE	AZIMUTH	DISTANCE	LOGARITHM	STATION	CO-ORDINATES		DESCRIPTION
					NORTH	EAST	
East Base - West Base	105° 28' 07"	995.50	2.9980387	East Base	2500.00	2500.00	Drill hole in small stone.
West Base - Yellow Rock	82° 22' 33"	1510.30	3.1790643	West Base	2765.51	1540.57	" in ledge.
Yellow Rock - Crotch No. 1	62° 08' 37"	1975.46	3.2958690	West Base	2765.51	1540.57	"
Crotch No. 1 - No. 2	15° 42' 07"	2112.05	3.3247045	West Moose	2299.63	1003.05	"
No. 2 - Benvenue	4° 25' 15"	1394.96	3.1445630	Yellow Rock	1577.42	753.18	"
Benvenue - West Green	25° 29' 07"	1240.51	3.0936018	Yellow Rock	1577.42	753.18	"
West Green - Yellow Rock	238° 12' 37"	960.30	2.9824092	Crotch Rock	250.39	936.43	"
Yellow Rock - Crotch	15° 05' 04"	764.21	2.8832177	Crotch	250.39	936.43	"
Crotch - West Base	3° 31' 43"	2050.39	3.3118371	Crotch No. 1	466.77	1828.41	"
West Base - Crotch No. 1	333° 12' 43"	2053.20	3.3124314	Crotch No. 1	466.77	1828.41	"
Crotch No. 1 - Crotch No. 2	229° 05' 02"	711.31	2.8520373	Crotch No. 2	1109.20	2392.47	" large rock.
Crotch No. 2 - Crotch No. 3	77° 41' 41"	1015.31	3.0065968	Crotch No. 2	1109.20	2392.47	"
Crotch No. 3 - Crotch No. 4	157° 46' 54"	1862.56	3.2701091	Crotch No. 3	1704.59	3075.67	" ledge.
Crotch No. 4 - West Base	228° 55' 43"	306.23	2.9572380	Crotch No. 4	2235.57	4506.66	"
West Base - Crotch No. 4	124° 36' 54"	186.04	3.2709206	Crotch No. 4	2235.57	4506.66	"
Crotch No. 4 - Benvenue	190° 28' 27"	1323.41	3.1216887	Benvenue	1966.23	3619.81	" small stone.
Benvenue - West Green	244° 19' 11"	603.77	2.7808769	Benvenue	1966.23	3619.81	"
West Green - Middle Green	163° 43' 24"	1083.08	3.0346583	Benvenue	1966.23	3619.81	"
Middle Green - Thurlow	205° 29' 49"	1562.93	3.1933366	Thurlow	3005.89	3316.25	" Ledge.
Thurlow - Crotch No. 4	211° 41' 20"	2068.07	3.3155449	Middle Green	3364.99	4317.11	"
Crotch No. 4 - Middle Green	253° 06' 22"	926.84	2.9670088	Middle Green	3364.99	4317.11	"
Middle Green - Green Summit	242° 36' 45"	1566.36	3.1946149	Green Summit	3725.97	4706.16	"
Green Summit - Thurlow	250° 15' 45"	1063.33	3.0266684	Thurlow	2744.81	4980.42	"
Thurlow - Crotch No. 4	278° 55' 08"	1683.97	3.2263336	Thurlow	2744.81	4980.42	"
Crotch No. 4 - B.M. Knob	302° 54' 26"	1417.91	3.1516493	B.M. Knob	4464.25	6181.33	"
B.M. Knob - Green Summit	164° 22' 59"	1018.78	3.0080800	Green Summit	3725.97	4706.16	"
Green Summit - Two Bush	214° 55' 54"	2097.39	3.3216598	Two Bush	6254.98	3009.98	"
Two Bush - B.M. Knob	238° 14' 53"	1301.87	3.1145613	B.M. Knob	4464.25	6181.33	"
B.M. Knob - Water Tower	63° 24' 48"	1643.60	3.2173791	Water Tower	4055.46	2534.53	"
Water Tower - Round Island	114° 46' 37"	1706.33	3.2320631	Round Island	2976.90	3062.56	"
Round Island - E.S.S.	145° 41' 49"	3902.70	3.5913649	E.S.S.	4611.24	7413.51	" Auger hole in wharf.
E.S.S. - Barter	177° 06' 00"	1456.13	3.1632008	Barter	5539.77	10066.47	"
Barter - Russ Island	215° 53' 10"	1976.42	3.2958733	Russ Island	3597.80	11695.21	" Copper bolt, (U.S.C. & G.S. A.)
Russ Island - Round Island	270° 40' 30"	2807.79	3.4483642	Round Island	2976.90	3062.56	"
Round Island - B.M. Knob	117° 18' 13"	3242.48	3.5108773	B.M. Knob	4464.25	6181.33	"
B.M. Knob - E.S.S.	134° 44' 24"	2321.87	3.3658371	E.S.S.	4611.24	7413.51	"
E.S.S. - Barter	201° 23' 27"	2752.49	3.4397253	Barter	5539.77	10066.47	"
Barter - Russ Island	258° 43' 46"	2704.98	3.4311478	Russ Island	3597.80	11695.21	"
Russ Island - Barter	250° 42' 36"	2810.76	3.4488238	Barter	5539.77	10066.47	"
Barter - Russ Island	283° 18' 59"	4400.00	3.6434529	Russ Island	3597.80	11695.21	"
Russ Island - B.M. Knob	83° 11' 45"	1240.87	3.0937252	B.M. Knob	4464.25	6181.33	"
B.M. Knob - Water Tower	140° 00' 45"	2534.53	3.4038972	Water Tower	4055.46	2534.53	"
Water Tower - Round Island	109° 02' 12"	8081.80	3.9075074	Round Island	2976.90	3062.56	"

NOTE.

The vicinity of Bass Harbor Bar and Deer Island Thoroughfare is shown on sheet 1.

Distances are expressed in feet. Azimuths are referred to the True South as derived from the U.S.C. & G.S. line Russ Island - Stonington Water Tower.

Positions of stations are expressed in rectangular coordinates which are referred to axes parallel and perpendicular to the True Meridian.

Depths are expressed in feet and are referred to Mean Low Water as indicated by the U.S.C. & G.S. Bench Mark No. 1 located about 65 feet East of station B.M. Knob. The elevation of this bench mark is 7.2 feet above Mean Low Water.

The mean range of tide is 3.66 feet.

Positions of borings are shown by solid circles near which the numbers of the borings are written.

PROPOSED IMPROVEMENT.

To provide a depth of 15 feet at mean low tide over the shaded area.

U.S. Engineer Office,
Portland, Maine, September 13, 1912.

Approved: *W. S. Fisher*
Lieut. Col., Corps of Engineers, U.S. Army.
To accompany report of September 13, 1912.
to the Chief of Engineers.

BASS HARBOR BAR

AND

DEER ISLAND THOROUGHFARE.

MAINE.

FROM SURVEY OF OCT. - NOV., 1911.

SCALE, 1" = 2500

0 100 200 300 400 500 600 700 800 900 FT.

Prepared under the direction of

LIEUT. COL. W. E. CRAIGHILL, CORPS OF ENGINEERS, U.S. ARMY.

ASSISTANTS.

H. W. Hobbs, Asst. Engr. Thos. E. Forrest, Jun. Engr. in charge of survey.
Plotted by F. N. Scott, Draftsman, E. J. Finnigan, Surveyman. Traced by F. N. Scott, Draftsman.

IN TWO SHEETS - SHEET 2

DEER ISLAND THOROUGHFARE

5. *Deer Island Thoroughfare, Me.*—This is a narrow passage about 9 miles long, on the southerly side of Deer Island, which lies on the eastern side of the entrance to Penobscot Bay. The general depth is good, but at the westerly end numerous ledges make the much-used passage difficult and dangerous, over some of the ledges there being only about 7 feet at mean low tide. The mean tidal range is 9.66 feet.

The present project, which is the first for this locality, is to remove the obstructing ledges at the westerly end of the thoroughfare to a depth of 15 feet at mean low tide for a width of 300 feet, at an estimated cost of \$40,000. This project was adopted by the act of March 4, 1913, which provided the entire estimated cost. The examination and survey reports, with map, on which the project is based are printed in House Document No. 1128, Sixty-second Congress, third session. The project has not been modified. Specifications have been prepared and the work will be advertised at an early date. The total expenditures up to the close of the fiscal year ending June 30, 1913, have been \$581.71, representing for the most part the expense of a survey to determine accurately the quantity of ledge to be taken out.

The commerce at Stonington, on the thoroughfare, amounts to about 50,000 short tons per annum, and the passengers number from 2,200 to 2,500 over one line alone. From 150 to 200 sailing vessels per year take granite from Stonington. To this must be added a large number of vessels and many pleasure craft which pass through. During the survey 37 schooners passed through in one day.

Amount appropriated by river and harbor act approved Mar. 4, 1913.	\$40,000.00
June 30, 1913, amount expended during fiscal year for works of improvement.	581.71

July 1, 1913, balance unexpended.	39,418.29
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A 5.

IMPROVEMENT OF DEER ISLAND THOROUGHFARE, ME.

There were no operations during the year. Specifications have been prepared and it is proposed to advertise at an early date for bids for all the work covered by the project. Funds are available.

APPROPRIATION.

Mar. 4, 1913.	\$40,000
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COMMERCIAL STATISTICS.

The commerce at Stonington, on the Thoroughfare, amounts to about 50,000 short tons per annum, and the passengers number from 2,200 to 2,500 over one line alone. From 150 to 200 sailing vessels per year take granite from Stonington. To this must be added a large number of vessels and many pleasure craft which pass through. During the survey 37 schooners passed through in one day.

5. *Deer Island Thoroughfare, Me.*—This is a narrow passage about 9 miles long, on the southerly side of Deer Island, which lies on the eastern side of the entrance to Penobscot Bay. The general depth is good, but at the westerly end numerous ledges make the much-used passage difficult and dangerous, over some of the ledges there being only about 7 feet at mean low tide. The mean tidal range is 9.66 feet.

The present project, which is the first for this locality, is to remove the obstructing ledges at the westerly end of the thoroughfare to a depth of 15 feet at mean low tide for a width of 300 feet, at an estimated cost of \$40,000. This project was adopted by the act of March 4, 1913, which provided the entire estimated cost. The examination and survey reports, with map, on which the project is based are printed in House Document No. 1128, Sixty-second Congress, third session. The project has not been modified.

During the year a contract was made for doing all the work covered by the project. About 66 per cent of the area has been drilled and blasted, but none of the loosened material has been taken up, so that navigation has received no benefit as yet from the operations.

The total expenditures to the end of the fiscal year 1914 have been \$1,418.67, all for new work. About 33 per cent of the work has been accomplished.

The local commerce for the calendar year 1913 is reported as 227,828 short tons, the greater part of which was stone. The value of the commodities is estimated at \$1,618,684. From March 28 to June 30, 1914, during working hours 350 vessels passed the site of the work.

July 1, 1913, balance unexpended.....	\$39,418.29
June 30, 1914, amount expended during fiscal year, for works of improvement	836.96
July 1, 1914, balance unexpended.	38,581.33
July 1, 1914, outstanding liabilities.	97.20
July 1, 1914, balance available.....	38,490.13
July 1, 1914, amount covered by uncompleted contracts	31,624.50
(See Appendix A 5.)	

A 5.

IMPROVEMENT OF DEER ISLAND THOROUGHFARE, ME.

Expenditures during the fiscal year 1914 were \$836.96.

A contract was made in January, 1914, for all the work necessary for the completion of the project, which consists entirely in ledge excavation. The price is \$14.50 per cubic yard, measured in place.

The contractor began operations March 25, 1914, and has drilled and blasted about 66 per cent of the area. None of the loosened material has yet been taken up. About 33 per cent of the work involved in the project has been accomplished.

The contract is due to be completed on or before July 31, 1915.

APPROPRIATION.

Mar. 4, 1913..... \$40,000

 CONTRACT IN FORCE.

FOR LEDGE EXCAVATION.

Contractor: Eastern Dredging Co.

Date of contract: January 30, 1914.

Date of approval: February 6, 1914.

Date fixed for commencement: April 1, 1914.

Date fixed for completion: July 31, 1915.

Amount of contract: 2,181 cubic yards, place measurement.

Unit price: \$14.50 per cubic yard.

 COMMERCIAL STATISTICS.
Receipts and shipments.

	Short tons.
Beef.....	480
Canned goods.....	104
Coal, anthracite.....	3,500
Coal, bituminous.....	7,400
Fertilizer.....	125
Fish.....	1,087
General merchandise.....	6,000
Grain and flour.....	1,075
Iron, steel, and machinery.....	10,000
Molasses and sugar.....	1,200
Oil.....	500
Paper and rags.....	60
Provisions.....	1,100
Salt.....	480
Stone.....	191,404
Wood.....	313
Total.....	227,828

Arrivals and departures during calendar year ending Dec. 31, 1913.

Steamers, coastwise, average draft 14 feet.....	720
Sailing vessels, coastwise, average draft 14 feet.....	540
Number of passengers landing and departing by water.....	72,000

4. DEER ISLAND THOROUGHFARE, ME.

Location.—This is a narrow passage about 9 miles long, on the southerly side of Deer Island, which lies on the eastern side of the entrance to Penobscot Bay. The bottom and shores are rocky and irregular. The depth is good except at the westerly end. The least width is about 800 feet. The portion included in the project is a shoal area about 800 feet long and 300 feet wide at the westerly end. (See U. S. Coast and Geodetic Survey chart No. 6.)

Original condition.—The passage is a protected and much-used thoroughfare for east and west bound traffic. Its navigation is difficult, but the depth is 20 feet and greater except at the westerly end where there was only about 7 feet at mean low tide over ledges lying mid-channel.

Previous projects.—None.

Present project.—To excavate rock to a depth of 15 feet at mean low tide, over an area about 800 feet long and 300 feet wide, at the westerly end of the thoroughfare. The mean range in tides is 9.66

feet. The estimated cost was \$40,000. The project (see H. Doc. No. 1128, 62d Cong., 3d sess.) was adopted by the river and harbor act of March 4, 1913, which provided the entire estimated cost.

Operations and results prior to the fiscal year.—About two-thirds of the area to be excavated had been drilled and blasted, but none of the loosened material had been taken up. Expenditures amounted to \$1,418.67, all for original work.

Operations and results during the fiscal year.—At the beginning of the year the contractor had drilled and blasted about 66 per cent of the area, and the drilling and blasting were continued until the entire area had been gone over. In taking up the broken rock a great many irregular shoal areas were found and no attempt was made to determine the progress in contract units. The contractor has been going over the work a second time and the indications are that so far grade has been secured, though a special examination has not been made. This work is now nearly completed. The work paid for during the year amounted to 1,600 cubic yards, measured in place, at \$14.50 per cubic yard. The contract is based on a total estimated quantity of 2,181 cubic yards. The loosened material removed during the year amounted to 12,052 cubic yards, scow measurement. Expenditures amounted to \$23,009.39, all for original work.

Condition at the end of fiscal year.—The project is nearly completed and will give a straight channel about 350 feet wide and 15 feet deep at mean low tide, where formerly the least depth was about 7 feet and the channel crooked. The total expenditures have been \$24,428.06, all for new work.

Local cooperation.—None.

Effect of improvement.—The value of the improvement which is very soon to become available will not consist in an effect on freight rates, but in accommodation and facilities for regular and safe movement of a large water traffic east and west.

Proposed operations.—No estimate for 1917. The funds on hand are sufficient for any work that may be necessary.

Commercial statistics.—The commerce is local only and does not indicate the traffic through the thoroughfare. The greater part of the local tonnage is stone.

Comparative statement.

Calendar year	Short tons	Estimated value
1912.....		
1913.....	227,828	\$1,618,684
1914.....	212,251	1,698,830

Financial summary.

Amount expended on all projects to June 30, 1915.

New work			
Maintenance			

\$24,428.00

Amount expended during fiscal year ending June 30	1913	1914	1915
New work.			
Maintenance.			

\$581.71

\$836.06

\$23,000.39

APPROPRIATIONS

[For last five fiscal years only.]

Mar. 4, 1913		\$40,000.00
July 1, 1914, balance unexpended		38,581.33
June 30, 1915, amount expended during fiscal year, for works of improvement		23,009.39
July 1, 1915, balance unexpended		15,571.94
July 1, 1915, outstanding liabilities	\$2,613.15	
July 1, 1915, amount covered by uncompleted contracts	8,424.50	
		11,067.65
July 1, 1915, balance available		4,504.29

4. DEER ISLAND THOROUGHFARE, ME.

The contractor continued blasting operations and has been engaged in taking up the broken ledge. The total quantity of loose material removed is 12,052 cubic yards, scow measurement. Grade was not secured and most of the area has been gone over a second time. The work is now nearly completed.

APPROPRIATION.

Mar. 4, 1913		\$40,000
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CONTRACT IN FORCE.

FOR LEDGE EXCAVATION.

Contractor: Eastern Dredging Co.
 Date of contract: January 30, 1914.
 Date of approval: February 6, 1914.
 Date fixed for commencement: April 1, 1914.
 Date fixed for completion: July 31, 1915.
 Amount of contract: 2,181 cubic yards, place measurement.
 Unit price: \$14.50 per cubic yard.
 Percentage of completion: June 30, 1915; about 97.

COMMERCIAL STATISTICS.

Receipts and shipments.

	Short tons.
Beef.....	525
Canned goods.....	116
Coal, anthracite.....	4,000
Coal, bituminous.....	6,600
Fertilizer.....	150
Fish.....	1,175
General merchandise.....	6,500
Grain and flour.....	1,100
Iron, steel, and machinery.....	8,000
Molasses and sugar.....	1,005
Oil.....	650
Paper and rags.....	70
Provisions.....	1,400
Salt.....	510
Sand and stone.....	180,000
Wood.....	450
Total.....	212,251

Arrivals and departures during calendar year ending Dec. 31, 1914.

Steamers.....	1,072
Sailing vessels.....	450
Number of passengers landing and departing by water.....	105,000

4 DEER ISLAND THOROUGHFARE, ME

Location and description.—This is a narrow passage about 9 miles long, between Deer Island on the north and a number of smaller islands on the south, on the easterly side of the entrance to Penobscot Bay. The bottom and shores are rocky and irregular. The depth is good except at the westerly end. The least width is about 800 feet. The portion included in the project is a shoal area about 800 feet long and 300 feet wide at the westerly end. (See U. S. Coast and Geodetic Survey chart No. 6.)

Original condition.—The passage is a protected and much-used thoroughfare for east and west bound traffic. Its navigation is difficult, but the depth is 20 feet and greater except at the westerly end, where there was originally only about 7 feet at mean low tide over ledges lying mid-channel. The mean range of tide is 9.7 feet.

Previous projects.—None.

Existing project.—To excavate rock to a depth of 15 feet at mean low tide, over an area about 800 feet long and 300 feet wide, at the westerly end of the thoroughfare. The mean range of tide is 9.7 feet. The estimated cost was \$40,000. The project (see H. Doc. No. 1128, 62d Cong., 3d sess., with map) was adopted by the river and harbor act of March 4, 1913, which provided the entire estimated cost.

Operations and results during the fiscal year.—At the beginning of the year the work was nearly completed, but owing to the irregular bottom no attempt had been made to determine the progress in contract units. The excavation, which was done under contract, was completed in July, 1915. The contract price was \$14.50 per cubic yard, place measurement, and the total quantity of material removed was 2,339 cubic yards. Expenditures during the year amounted to \$15,571.94, all for new work.

Condition at the end of fiscal year.—The existing project, which includes all work done at this locality, was completed early in the fiscal year 1916. Operations have resulted in affording a straight channel about 350 feet wide and 15 feet deep at mean low tide over a rocky bottom, where formerly the least depth was about 7 feet and the channel crooked. The total expenditures have been \$10,000, the estimated cost, all for new work.

Local cooperation.—None.

Effect of improvement.—The value of the improvement is not reflected in freight rates, but in a safer, easier, and more regular passage for a large water traffic east and west.

Proposed operations.—No additional work is proposed. The project is completed and no further reports will be submitted.

Recommended modifications of project.—None.

Commercial statistics.—It has been impracticable to secure statistics for the calendar year 1915. The local tonnage amounts to about 215,000 tons, chiefly granite.

Financial summary

Amount expended on all projects to June 30, 1916

New work	-----	\$40,000
Maintenance	-----	-----

Amount expended during fiscal year ending June 30	1914	1915	1916
New work	-----	-----	-----
Maintenance	-----	-----	-----
	\$83,941	\$23,062.39	\$15,571.94

APPROPRIATIONS

for last five fiscal years only

Mar. 4, 1913	\$40,000.00
July 1, 1915, balance unexpended	15,571.94
June 30, 1916, amount expended during fiscal year for works of improvement	15,571.94

4. DEER ISLAND THOROUGHFARE, ME.

The contractor continued the work of removing shoals over which grade had not been secured by earlier operations. The contract, which covered all the work proposed by the project, was completed July 22, 1915.

The improvement, which consisted in rock excavation, involved the removal of 2,339 cubic yards of material, measured in place.

APPROPRIATION.

Present project, Mar. 4, 1913----- \$40,000

CONTRACT IN FORCE.

Eastern Dredging Co., for excavating 2,181 cubic yards of rock.
 Price: \$14.50 per cubic yard, place measurement.
 Approved February 6, 1914, to be commenced by April 1, 1914, and completed by July 31, 1915.
 Completed.

COMMERCIAL STATISTICS.

It has been impracticable to secure statistics for the calendar year 1915. The local tonnage amounts to about 215,000 tons, chiefly granite.